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THE EFFECT OF FIRM LIFE CYCLE ON CORPORATE POLICIES

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ABSTRACT

The present study was conducted to examine the effect of firm life cycle on corporate policies, where firm growth was used as the independent variable and investment, capital expenditures, debt and cash holdings as the dependent variables. The study was applied regarding purpose and causal (post hoc) regarding methodology. The population was the firms listed in the Tehran Stock Exchange. Using systematic elimination sampling method, 130 firms were selected as the sample with study period of 2012-2016. Data collection method was library with multiple regressions, and panel data was used to test the hypotheses. The results indicated that firm growth of has a positive and significant effect on capital expenditures, yet firm growth has no significant effect on the investment of firms. Moreover, firm growth has no significant effects on debt and level of cash holdings of the firms.

Keywords: Firm Growth, Investment, Capital Expenditures, Debt, Cash Holdings.

INTRODUCTION

Life cycle theory assumes that like all living organisms, firms and economic enterprises have a life curve or life cycle. Business enterprises face fluctuations given the economic, social and political conditions governing the external environment and internal management conditions over their lifetime, forming the life cycle of the firm. Theorists of economics and accounting have divided the firm's life cycle into several stages according to criteria such as firm's age, sales changes, capital expenditures, dividends and other factors (Akbarzadeh and Heidari, 2016). Under the conditions where financial and operational conditions of the firms differ significantly in different stages of their life cycles, they will pursue specific policies according to each stage of their economic life.

For a young firm, the liquidity need goes up due to the improvement in the ability to serve as it moves from the initial stage to maturity. This move also increases the amount of debt, and a young firm needs more capital to advance its investment goals in the move from birth to maturity. On the other hand, with the reduction of the internal cash and cash funds, the firm will move towards the state of weakness and stagnation.

The classic financial-theory models insert that the firms adopt investment decisions to maximize shareholders' wealth and adjust capital structure to maximize the value of the firm (Myers & Maglev, 1984) and give the additional cash to shareholders (Jensen, 1986).

In the firm's financial growth period, as the cash increases, the managers decide whether to distribute cash between shareholders, spend on domestic expenditures, use it for external gain, or continue holding it. How the profit-seeking managers make a choice between spending and holding cash is a vague issue. According to hierarchical theory, the firms prefer financing from

internal resources to external financing that is sensitive to information. This theory is based on the assumption that individuals inside the firm are more aware than the shareholders. If the resources inside the firm are not enough to finance optimal investment programs and prevent information asymmetry, managers may be forced to abandon profitable plans. In this case, the cash is very valuable, and the only opportunity for the issuing shares without losing market value occurs when there is no or very little information asymmetric (Drewts et al., 2010).

Moreover, business units always face many investment opportunities and need to make logical decisions on an optimal investment. In fact, the investment of each business unit should be done according to the limited resources and efficiency. This is done by the evaluation criteria of the projects, such as the Net present value (NPV). According to this method, investment in one or more projects would be justifiable if NPV of that plan were positive. Therefore, the accepting projects with negative NPV would result in more investment and not optimal investment (Verdi, 2006).

According to the above points, the present study tries to answer the following questions:

1. Does firms' investment increase parallel to the firm growth?
2. Does firm debt increase parallel to the firm growth?
3. Does cash holding of firms increase parallel to the firm growth?
4. Do capital expenditures increase parallel to the firm growth?

THEORETICAL BASICS AND LITERATURE REVIEW

All living things, including plants, animals and humans, follow the life curves or life cycles. Such creatures are born, grow, age and eventually die. At each stage of their life cycle, these living systems have specific behavioral patterns to overcome the problems of that period and the problems of transition from one period to another. Firm's life cycle is one of the economic characteristics of each firm. The firm's life cycle theory assumes that firms and enterprises, like all the living organisms that are born, grow and die, have a life cycle curve (Karami and Amrani, 2010).

According to life cycle theory, firms have financial and economic characteristics at different stages of their life cycle that are specific to each other i.e. the financial and economic characteristics of a firm are affected by that stage of the life cycle where the firm is. The results of previous studies show that the reaction of capital markets to accounting information in different stages of the life cycle have significant differences. Financial theories claim that firms have high growth and profitability in the early stages of their life cycle. On the other hand, large size and low or even negative profitability growth are the characteristics of those firms in the final stages of the life cycle. Thus, the question that arises has to do with information content difference in profitability to explain the return on shares according to the firm size, surrounded by the information content of the differences related to stages of the firm's life cycle (Rahmani et al., 2010).

The expected returns of investors are composed of Capital Gain and dividends. One of the factors affecting the risk of dividend payments as well as the desired capital gain is the life cycle of the firm. According to the life cycle theory, considering the expected risk and returns at each stage of their life cycles, the firms obtain cash flow that, given the investment opportunities and the realization of growth opportunities, managers should decrease Free cash flow (FCF) by investment and / or dividing it among the shareholders (Rahmani et al., 2010).



In accounting, some researchers have examined the effect of firm life cycle on accounting information. These researchers have perceived four stages for describing the firm's life cycle as follows:

- Start-up or Emerging Stage
- Grow-up or Growth Stage
- Maturity or Stability Stage
- Stage of decline or stagnation (Karami and Omrani, 2010)

Jensen defines FCF as surplus cash flows of the cash invested in projects whose NPV is positive and states that this FCF is invested in projects where NPV is negative.

The concept of cash flow focuses on the amount of liquidity. Firms invest in current and long-term assets to continue their lives. Hence, FCF is the surplus cash flow of the invested cash in assets such as inventory, equipment and stocks of other firms, and so on by the firm. When the company can create surplus cash flows for business survival, it has an FCF that can be shared between shareholders or maintained for further growth in the company.

Nowadays, due to firms turning to performance evaluation, FCF has attracted the attention of many groups. FCF can be described as an index in the performance evaluation and reporting firm's economic value. The basic assumption is that the value of a firm is due to its ability to generate cash flows. Thus, the value of a firm depends on the amount of future cash flows, timing and risk of these flows. This valuation method considers all the elements effective in the value of a firm. Therefore, remuneration committees and general assemblies of firms have turned to this scale to relieve from accounting profit and other performance-based measurement scales. Economic value added and FCF measures are the main measures of the firm evaluation that do not have the failures of other accounting scales and try hard to create a balance between the interests of the shareholder class and the managers.

Without any adjustments, cash flow balances may be misleading as output cash flows do not reflect the output required for firm survival. One of the alternative scales is FCF that was developed by Jensen. FCF is a criterion for measuring firms' performance indicating the cash available to the firm after spending the funds necessary to maintain or develop its assets.

FCF is important as it allows the firm to search for opportunities that increase shareholder value. Without having cash, developing new products, business gain, paying cash benefits to shareholders and reducing debt would not be possible. On the other hand, the cash has to be kept at a level that maintains a balance between the cost of keeping the cash and insufficient cash costs.

FCF is a golden standard as it shows the profitability of a firm's operations. FCF is not a complete criterion, but it is difficult to manipulate compared to the profit and profit of each share, which is why it is preferred to the net profit. A firm's profit may be high and growing, but as long as FCF is not considered, one cannot understand whether this profit is equal to the liquidity earned by a firm in a given year or not. The capital owners are ultimately interested in FCF. FCF shows the withdrawal funds, something that profit does not show.

Most investment projects need large and long-term financial resources with great and long-term effects making the effect of capital expenditure on the firm performance unpredictable but are important at the same time. Making logical investment decisions can improve the firm's value; it can also improve product quality, reduce costs, improve product performance,



increase customer satisfaction, and increase future earnings. Some previous studies have studied the relationship between capital investment decisions and the value of the firm.

Nowadays, with the expansion of the quality level of activities as well as the expansion of economic affairs, financial decisions of the firms are among the most complicated issues created in the best conditions for the best return and utility. Regarding this, as financial managers are responsible for these decisions, they try to recognize the relationships of indices in firms. Among these is the issue of investment decisions (Mehrani and Bagheri, 2009). One of the important factors in solving economic problems of countries is the expansion of investment, which is insufficient alone. Given the limited financial resources, besides investment development, the increase of investment efficiency is of great importance (Modarres and Hesarzadeh, 2008). Investment means the current value of money in a given period to obtain future income that will reward the investor for 1) time to receive funds, and 2) the expected inflation rate 3) uncertainty in future payments. When we invest, we postpone current consumption to increase our assets, so we can spend more in the future. This change may be either due to cash flows such as interest or dividends or a positive or negative change in asset prices. An investor can be an individual, the government, a pension fund or a firm. They invest to get the outcome of their investment that in the result of delaying consumption. They look for a rate of return that compensates for the expected inflation rate and uncertainty of return over time. Thus, to reach these goals, the investors should make a reasonable evaluation of the alternative and different investments. For this choice, one needs to estimate and evaluate the risk and return for the options (Eslami Bidgoli et al., 2005).

Literature review

In a study entitled “Corporate governance and cash-holdings in the middle east and north Africa: evidence from domestic and foreign sovereignty,” Al-Najjar & Clark (2017) found a negative correlation between the size of the board of managers and the level of cash holdings, showing that firms hold less cash to reduce agency costs. External corporate governance activities are important in cash-management decisions as firms in countries that have international standards of securities law and banking supervision to keep less cash.

Chen (2016) showed that managers at the maturity stage are more willing for profit management, so the quality of internal controls at this stage can help improve the quality of earnings, yet such a thing is not in the process of growth and decline.

In a study entitled “Weaknesses in internal control and cash holdings,” Houn & Cho (2016) showed that firms do not accompany material weaknesses in internal control with lower cash value in general. In addition, the relationship between internal control issues connected with the entity level stronger compared to those related to the account level. Moreover, after qualified inspecting firms are inadequate in internal control, cash value will increase.

Nagar & Sen (2016) concluded that the life cycle affects the pattern of firm profitability classification, especially firms in decline, using this method to avoid reporting operational losses.

Nagar & Radhakrishnan (2015) stated that firms manage their profits through real activities in the growth and maturation stages, whereas they do not do so at the stage of emerging, which affects their future performance.

In a paper entitled “Long-term debts and agency problems of over investment,” Ranjan and Miranda (2010) concluded that long-term debt issuance would lead to a reduction in over



investment in cash and capital expenditure, and this negative relationship is more intense for the firms with weaker investment opportunities. In addition, long-term debt plays an important role in reducing investment in firms with high agency problems.

In a study entitled “Examining the relationship between long-term and short-term financing methods on equity returns,” Lak et al. (2017) concluded a positive and significant relationship between long-term debt ratio and return on equity. This means with the increase in the long-term debt ratio, the return on equity is rising, so that an increase of 1% in the long-term debt ratio will bring about an increase of 0.13% in the issuance of equity returns.

Esna Ashaari and Naderi Nour Eini (2017) conducted a study entitled “Profit management model in the firm's life cycle.” Their results showed that firms use the accruals management model in the emerging and decline of the pattern of earnings management, whereas in the growth and maturation stages, real activities play a dominant role in the management of profits. Furthermore, as the prospects for firm growth in the growth and maturity stages increase, the share of accruals in profit management increases accordingly.

Pourzamani & Omourvand (2012) examined the non-financial of the product market and future capital expenditures of firms, with the results showing a significant relationship between non-financial performance in the product market and future capital expenditures so that as the current flawless ratio is worse and the market share of the product is lower, future capital expenditures will be higher. Thus, high-failure firms are investing in capital expenditures to maintain their market competitiveness to increase their performance.

Ebrahimi et al. (2016) stated that the firm's life cycle (growth, maturity and decline) affects the relationship between earnings quality and information asymmetry, so the firms in the growth stage with quality improvement reduce information asymmetry.

Shayanfar (2016) studied the relationship between non-financial performance and capital expenditures in firms listed in Tehran Stock Exchange showing a significant relationship between market share and capital expenditures of the firms listed in Tehran Stock Exchange. Additionally, there is a significant relationship between product-market competition and capital expenditures of listed firms in Tehran Stock Exchange.

Sarlak et al. (2015) showed that the firm's life cycle is not related to the corporate financing method, and firms follow a hierarchical approach to their financing.

In a paper entitled “Long-term debt and investment in cash and capital expenditures according to agency theory,” Moradi and Rahmanian (2012) concluded a negative and significant relationship between long-term debt and over investment (in cash and capital expenditures) and average over investment in cash and capital expenditure in firms with lower growth opportunities.

Aghayi et al. (2009) studied the effect of ten factors on maintaining cash holdings by firms. Their study evidence shows that receivable accounts, net working capital, inventories and short-term debts are among the most important factors with a negative effect on cash holdings, respectively. On the other hand, the growth opportunities of the firm, dividends, fluctuations in cash flow and net profit are among the most important factors with a positive effect on cash holding. However, there was not enough evidence of the negative effect of long-term debt and firm size on cash holdings.

Mehrani et al. (2009) tested the quality of accounting and cash accumulation according to Terval and Solana (2009) model; their results - conducted in 2000-2006 and in the firms



listed to Tehran Stock Exchange - showed that the level of available cash in firms with higher accounting quality is lower compared to those with lower accounting quality.

HYPOTHESES

1. Along with firm growth, firms' investment increases.
2. Along with firm growth, firms' debt increases.
3. Along with firm growth, firms' cash holding increases.
4. Along with firm growth, firms' capital expenditures increase.

METHODOLOGY

The present study was correlational as the relationship between the variables is examined. It is causal (post hoc); post hoc method is used when the researcher examines the subject after the occurrence of events. It is an applied regarding the purpose. Stata software and panel data regression were used to test the hypotheses.

Data collection method was library. Theoretical basics were collected from books and journals, papers, and specialized Persian theses in financial and accounting fields. The databases, document, records and firm accounts, financial statements and other documents and accompanying notes from the Tehran Stock Exchange archive, and Rahavard Novin software were used for data collection.

Population

The population was all firms listed in Tehran Stock Exchange. Systematic deletion sampling (screening) was used for selecting the proper sample. All firms of the population with the following conditions (from 2012 to 2016) were selected as sample:

1. For increasing comparability, their financial period should end in March 20.
2. During the examined period (5 years), they should not change the financial period.
3. The required information in defining variables should be available.
4. Their shares should be traded on the market and not stop trading.
5. They should not be a part of financial firms (such as banks, financial institutions) and investment firms or financial intermediation firms.

Research variables and measuring them

Independent variable

Dickinson (2011)

$$Group_i = \alpha_0 + \alpha_1 AGE_i + \alpha_2 RETA_i + \alpha_3 EBIT_i + \alpha_4 AGrth_i + \varepsilon_i$$

AGE = firm age = Year t - Year of establishment of the firm

RETA = ratio of accumulated profits to total assets

EBIT = Cash flow representative = total cash flow

AGRTH = asset growth

DCS = Cash flow pattern classification program

MLDS = linear analysis steps

Dividing firms into 4 stages (birth, growth, maturity, decline - stagnation)

Independent variable encompasses life cycle variables including:

Classification of the firms to the firm's life cycle stages

First, the value of each of the variables of sales growth, capital expenditures, dividends ratio, and firm's age is calculated for each year.

Δ : is the firm's sales growth that is calculated as follows:

$(\text{Total income of year } t-1) / ((\text{Total income of year } t-1) - (\text{Total income of year } t)) = \Delta$

CVE: the changes in capital expenditures that result from the division of the increase in fixed assets into market value of equity and long-term debt

DPR is the dividend earned as follows:

$\text{DPR} = \text{dividend per share} / \text{Earnings per share}$

AGE: the firm's age according to the year of establishment

Then, the year-firms are divided into five classes based on each of the four variables and, according to placement in the quotas; they get a score from 1 to 5.

Then, for each year-firm gets a composite score is obtained, which is classified according to the different circumstances in one of the stages of growth, maturity and decline:

- A. If the total score is between 16 and 20, it is in the growth stage.
- B. If the total score is between 9 and 15, it is in the maturity stage.
- C. If the total score is between 4 and 8, it is in the phase of decline.

(Mehrani, Tahriri, and Farhadi, 2014)

Cash flow included"

1. Operating cash flow
2. Cash flow from investment funds and the profit paid for financing
3. Cash flow from income tax
4. Cash flow from investment activities
5. Cash flow from financing activities

According to these variables, during five years from 2012 to 2016, the firms are classified in elementary, growth, maturity, and decline stages

In this classification, the dependent variables are examined, so the dependent variables are obtained separately for each category.

Using the model be De Angelo et al. (2010), we examine the effect of the life cycle on corporate policies by OLS model (DCS, MDLA)

$$[CP]_{y,i} = \alpha_0 + \alpha_{INTRO} LC_{INTRO,i} + \alpha_{GROWTH} LC_{GROWTH,i} + \alpha_{MATURE} LC_{MATURE,i} + \alpha_{SHADEC} LC_{SHADEC,i} + \sum \alpha_y x_{y,i} + \epsilon_i$$

LC_X = life cycle index that gets 1 if the firm is in step X, otherwise it will be zero

X = [the stage of birth, growth, maturity, stage of decline or stagnation]

X_Y = Control variables for corporate policies of the firm Y

$[CP]_Y$ = Corporate policy variables for firm Y

$[CP]_Y = [\text{INVESTMENT, EQUISS, DISS, } \Delta \text{ CASH}]$

So:



[INVESTMENT ,EQUISS, DISS, Δ CASH]

$$= \alpha_0 + \alpha_{INTRO} LC_{INTRO,i} + \alpha_{GROWTH} LC_{GROWTH,i} + \alpha_{Mature} LC_{Mature,i} + \alpha_{SHADEC} LC_{SHADEC,i} + \sum \alpha_y x_{y,i} + \epsilon_i$$

Dependent variables:

Corporate policies include holding cash, net equity, capital expenditures and net long-term debt.

$$[CP]_Y = [INVESTMENT, EQUISS, DISS, \Delta CASH]$$

INVESTMENT (capital expenditure)

$$= \frac{\text{Selling machinery and equipment} - \text{cash repayment for furniture, machinery and equipment}}{\text{the assets at the start period}}$$

$$EQUISS(\text{net issues share}) = \frac{\text{net equity}}{\text{the assets at the start period}}$$

$$DISS(\text{net debts of the period}) = \frac{\text{net debts of the period}}{\text{the assets at the start period}}$$

$$\Delta CASH(\text{net cash holding}) = \frac{\text{net cash holding } \Delta}{\text{the assets at the start period}}$$

$$CASH(\text{cash holding}) = \text{transactional securities} + \text{cash}$$

Control variables include:

$$CASH\ FLOW(\text{Operational Cash Flow}) = \frac{\text{Operational Cash Flow}}{\text{the assets at the start period}}$$

$$SIZE(\text{firm size}) = \text{total assets}$$

$$Sales(\text{sales}) = \frac{\text{sales}}{\text{total assets}}$$

$$Q = \frac{\text{market value of equity} - \text{book value of equity} + \text{book value of total assets}}{\text{total assets}}$$

$$\Delta NWC = \frac{\text{net changes of the operational capital}}{\text{total assets}}$$

$$\text{net operational capital} = \frac{\text{current assets} - \text{current debts}}{\text{the assets at the start period}}$$

$$\text{stdebet} = \frac{\text{changes in short-term debts}}{\text{changes in total assets}}$$



$$\text{Cash holding} = \frac{\text{cash} + \text{salable securities}}{\text{the assets at the start period}}$$

$$\text{leverage} = \frac{\text{total debts}}{\text{total assets}}$$

$$\frac{D}{E} \text{ Ratio} = \frac{\text{total debts}}{\text{total equity}}$$

$$\text{Gross ppE} = \frac{\text{gross machinery and equipment}}{\text{total assets}}$$

$$\text{Inventory} = \frac{\text{inventories}}{\text{total assets}}$$

RESULTS

Studying the descriptive statistics of variables during the research period

Table 1 presents some of the concepts of descriptive statistics of variables, including mean, median, minimum observations, maximum observations and standard deviation.

Table 1: Descriptive statistics of research variables

Variable	Symbol	Mean	Median	Max.	Min.	SD
firm growth	LIFE CYCLE	12.00000	12.00000	19.00000	4.000000	2.453889
Investment	INVESTMENT	0.054000	0.031256	0.774504	3.73E-06	0.075064
capital expenditures	EQUISS	0.502382	0.483060	2.015163	-1.03068	0.291217
Firm debt	DISS	0.081082	0.046271	0.781266	0.000000	0.100127
Cash holding	Δ CASH	0.046973	0.027119	0.823360	0.000435	0.063560
Operational cash flow	CASHFLOW	0.141616	0.119692	1.147600	-0.367592	0.164550
Firm size	SIZE	6.177904	6.089452	8.316723	4.556471	0.643060
Sales	SALE	0.860619	0.762858	3.364923	0.006184	0.499707
Tobin's Q ratio	Q	2.677455	2.402373	8.599341	0.560578	1.093766
Changes in operational capital	Δ NWC	0.158305	0.153291	1.813711	-1.167367	0.276332
Financial leverage	LEVREG	0.580521	0.581304	2.315169	0.012733	0.233667
Debt ratio	RATIO	1.523353	1.312042	303.8242	-628.5027	28.21541
Properties and machinery	GROSSPPPE	0.252733	0.217634	0.801112	0.000356	0.167509
Inventory ratio	INVENTUTRY	0.243697	0.225900	0.871393	0.000000	0.138689

According to the above table, the mean capital expenditure is 0.5023, the median is 0.4830, and the standard deviation is 0.2912. Thus, considering the close values of median and mean and low standard deviation (less than 0.50), the data related to this variable is close to normal. In other dependent variables, the median is close to the mean and the standard deviation is less than 0.5.



Examining the assumptions of the linear regression model

There is a set of assumptions called the classical assumptions stated as residual (or model error). For linear regression model, the estimators of regression coefficients are the best estimates without linear bias, it is necessary to examine the assumptions of this model. Therefore, we will explain these assumptions and then describe the results of the estimates.

- **Constant variance of error statement (Residuals)**

Another assumption of linear regression is that all remaining sentences have the same variance. In practice, this assumption may not apply and due to various reasons, such as incorrect form of the model function, the presence of outlier points, and structural failure in the population and so on, we can see the phenomenon of heterogeneity of variance. Economists to test this problem have introduced various tests. In this study, the homogeneity of variance of the residuals was investigated through ARCH test, whose results are shown in Table 2, so the zero assumption is confirmed showing the existence of homogeneity of variance. Thus, there is no problem of heterogeneity of variance in the model.

Table 2: Results from the constant error analysis of error statement

Research model	F statistics	Possibility	Results
First	0.277	0.633	Lack of heterogeneity of error variance
Second	0.058	0.809	Lack of heterogeneity of error variance
Third	1.241	0.265	Lack of heterogeneity of error variance
Fourth	0.134	0.714	Lack of heterogeneity of error variance

- **Lack of collinearity between explanatory sentences**

In this study, Variance Inflation Factor (VIF) was used to examine the lack of collinearity. When VIF index is less than 10, it shows lack of collinearity. The results of this test show that VIF of the independent and control variables of the research model is within its permissible limits with no problems.

Table 3: The results of the test showing the lack of collinearity between the explanatory sentences of the model

Variable	VIF
LIFE CYCLE	1.341509
CASHFLOW	1.472736
SIZE	1.473285
SALE	1.266820
Q	2.091870
Δ NWC	2.843134
LEVREG	2.325724
RATIO	1.008679
GROSSPPPE	1.802441
INVENTUTRY	1.353643

Based on the results of the test, as VIF is less than 5, there is no collinearity relationship between independent and control variables.

- *Normality of an error statement*

Jarque-Bera test was used to test the normality of the error statement. According to the results, the probability of Jarque-Bera test statistic in the research model is less than 5%. Thus, the zero assumption that the error component is normal is rejected. When the sample size is large enough, the deviation from the normal assumption is usually trivial and its consequences are negligible. Under these conditions, according to the central limit theorem, one can see that even if the residuals are not normal, the test statistics follow asymptotically the normal distribution; they are without bias and are efficient. Thus, according to these issues, one can ignore the assumption of the normal component of the error.

Table 4: Results from the normal error statement

Research model	Jarque-Bera	Probability	Result
First	14426.44	0.0000	Normality of error statement
Second	1489.82	0.0000	Normality of error statement
Third	2776.72	0.0000	Normality of error statement
Fourth	20907.23	0.0000	Normality of error statement

- *F Limer Test and Hausman Test*

As shown in Table-5, F Limer Test probability of the research model is less than 5%, so the panel method is used to estimate the model. In addition, the results of the Hausman test showed that a constant effect method was used to estimate the model.

Table 5: Results of F Limer Test

Research model	Statistic type	Statistic value	Probability	Results
First	F statistic	2.606	0.00	Panel
	Chi-square	25.48	0.00	Constant effects
Third	F statistic	9.350	0.00	Panel
	Chi-square	25.99	0.00	Constant effects
Fourth	F statistic	2.319	0.00	Panel
	Chi-square	26.112	0.00	Constant effects
Fifth	F statistic	3.396	0.00	Panel
	Chi-square	25.217	0.00	Constant effects

Model estimation and analysis of results

Eviews 9 software was used to determine the relationship between variables.

- *The results of research hypotheses*

Hypothesis 1: Along with firm growth (life cycle), firms' investment increases

In Table 6, the probability (Sig.) of F value is 0.0000 and since this value is less than 0.05, the zero assumption is rejected at the 95% confidence level i.e. the model is significant. The value of Durbin-Watson statistics is 2.14, showing the absence of auto-correlation of errors. The results of the adjusted coefficient of determination showed that approximately 46.07% of the variations of the dependent variable are explained by the independent and control variables.

The results show that at 95% confidence level, the firm's growth rate (life cycle) has not had a significant effect on the dependent variable (firm investment), so this hypothesis is rejected.



Table 6: The results of estimation of the first model

INVESTMENT _{it} = $\alpha_0 + \beta_1$ LIFE CYCLE _{it} + β_2 CASHFLOW _{it} + β_3 SIZE _{it} + β_4 SALE _{it} + β_5 Q _{it} + β_6 Δ NWC _{it} + β_7 LEVREG _{it} + β_8 RATIO _{it} + β_9 GROSSPPPE _{it} + β_{10} INVENTUTRY _{it} + ε_i				
Variable	Estimated coefficient	Standard error	T statistics	Probability
LIFE CYCLE	0.000226	0.001744	0.129411	0.8971
CASHFLOW	0.062230	0.023120	2.691545	0.0073
SIZE	-0.074934	0.028931	-2.590093	0.0099
SALE	0.012023	0.014158	0.849167	0.3962
Q	-2.15E-05	0.005028	-0.004277	0.9966
Δ NWC	-0.005000	0.023089	-0.216546	0.8286
LEVREG	-0.009360	0.029497	-0.317315	0.7511
RATIO	-3.51E-06	9.55E-05	-0.036809	0.9707
GROSSPPPE	0.031390	0.038873	0.807514	0.4197
INVENTUTRY	-0.054479	0.047105	-1.156540	0.2480
C	0.506696	0.200012	2.533329	0.0116
Adjusted Coefficient of determination	46.07%			
Durbin-Watson	2.14			
F statistics	3.136			
Probability (f statistics)	0.0000			

Second hypothesis: Along with firm growth (life cycle), firms' capital expenditures increase.

To test this hypothesis, the results of model estimation presented in Table 7 have been used. The probability (Sig.) of F value is 0.0000 and since this value is less than 0.05, the zero assumption is rejected at the 95% confidence level i.e. the model is significant. The value of Durbin-Watson statistics is 2.14, showing the absence of auto-correlation of errors. The results of the adjusted coefficient of determination showed that approximately 46.07% of the variations of the dependent variable are explained by the independent and control variables.

The results show that at the 95% confidence level, the firm's growth rate (life cycle) has a significant effect on the dependent variable (capital expenditures), so this hypothesis is confirmed.

Table 7: Estimates of the second model of the research

EQUISS _{it} = $\alpha_0 + \beta_1$ LIFE CYCLE _{it} + β_2 CASHFLOW _{it} + β_3 SIZE _{it} + β_4 SALE _{it} + β_5 Q _{it} + β_6 Δ NWC _{it} + β_7 LEVREG _{it} + β_8 RATIO _{it} + β_9 GROSSPPPE _{it} + β_{10} INVENTUTRY _{it} + ε_i				
Variable	Estimated coefficient	Standard error	T statistics	Probability
LIFE CYCLE	2.346014	0.631733	3.713619	0.0002
CASHFLOW	-0.431420	0.584886	-0.737615	0.4611
SIZE	1.850267	0.722014	2.562649	0.0107
SALE	2.366507	0.340780	6.944385	0.0000
Q	-0.626796	0.123634	-5.069771	0.0000
Δ NWC	0.106796	0.619658	0.172346	0.8632
LEVREG	0.781583	0.868837	0.899574	0.3688
RATIO	-0.001356	0.002390	-0.567480	0.5706

GROSSPPPE	4.662607	0.960751	4.853086	0.0000
INVENTUTRY	-0.067592	1.188152	-0.056888	0.9547
C	-2.537201	5.009767	-0.506451	0.6128
Adjusted Coefficient of determination	68.43%			
Durbin-Watson	2.21			
F statistics	7.923			
Probability (f statistics)	0.0000			

Hypothesis 3: Along with firm growth, firms' debt increases.

To test this hypothesis, the results of model estimation presented in Table 8 have been used. The probability (Sig.) of F value is 0.0000 and since this value is less than 0.05, the zero assumption is rejected at the 95% confidence level i.e. the model is significant. The value of Durbin-Watson statistics is 2.014, showing the absence of auto-correlation of errors. The results of the adjusted coefficient of determination showed that approximately 77.11% of the variations of the dependent variable are explained by the independent and control variables. The results show that at the 95% confidence level, the firm's growth rate (life cycle) has no significant effect on the dependent variable (firms' debt), so this hypothesis is rejected.

Table 8: Estimates of the third model of the research

$DISS_{it} = \alpha_0 + \beta_1 LIFE\ CYCLE_{it} + \beta_2 CASHFLOW_{it} + \beta_3 SIZE_{it} + \beta_4 SALE_{it} + \beta_5 Q_{it} + \beta_6 \Delta NWC_{it} + \beta_7 LEVREG_{it} + \beta_8 RATIO_{it} + \beta_9 GROSSPPPE_{it} + \beta_{10} INVENTUTRY_{it} + \varepsilon_i$				
Variable	Estimated coefficient	Standard error	T statistics	Probability
LIFE CYCLE	-0.000888	0.001516	-0.585555	0.5584
CASHFLOW	0.002162	0.020093	0.107577	0.9144
SIZE	0.037667	0.025143	1.498085	0.1347
SALE	0.013688	0.012305	1.112438	0.2665
Q	0.007746	0.004369	1.772734	0.0769
Δ NWC	0.178901	0.020066	8.915720	0.0000
LEVREG	0.258546	0.025635	10.08556	0.0000
RATIO	-0.000399	8.30E-05	-4.811173	0.0000
GROSSPPPE	0.251206	0.033784	7.435751	0.0000
INVENTUTRY	-0.051492	0.040938	-1.257808	0.2090
C	-0.402535	0.173826	-2.315743	0.0210
Adjusted Coefficient of determination	77.11%			
Durbin-Watson	2.014			
F statistics	12.362			
Probability (f statistics)	0.0000			

Fourth hypothesis: Along with firm growth (life cycle), firms' cash holding increases.

To test this hypothesis, the results of model estimation presented in Table 9 have been used. The probability (Sig.) of F value is 0.0000 and since this value is less than 0.05, the zero assumption is rejected at the 95% confidence level i.e. the model is significant. The value of Durbin-Watson statistics is 2.18, showing the absence of auto-correlation of errors. The results



of the adjusted coefficient of determination showed that approximately 67.62% of the variations of the dependent variable are explained by the independent and control variables. The results show that at the 95% confidence level, the firm's growth rate (life cycle) has no significant effect on the dependent variable (cash holding), so this hypothesis is rejected.

Table 9: Estimates of the third model of the research

$\Delta \text{CASH}_{it} = \alpha_0 + \beta_1 \text{LIFE CYCLE}_{it} + \beta_2 \text{CASHFLOW}_{it} + \beta_3 \text{SIZE}_{it} + \beta_4 \text{SALE}_{it} + \beta_5 \text{Q}_{it} + \beta_6 \Delta \text{NWC}_{it} + \beta_7 \text{LEVREG}_{it} + \beta_8 \text{RATIO}_{it} + \beta_9 \text{GROSSPPPE}_{it} + \beta_{10} \text{INVENTUTR}_{it} + \varepsilon_1$				
Variable	Estimated coefficient	Standard error	T statistics	Probability
LIFE CYCLE	2.103438	1.448776	1.451872	0.1472
CASHFLOW	-0.390462	0.613334	-0.636622	0.5247
SIZE	2.154930	0.727786	2.960940	0.0032
SALE	2.319545	0.344571	6.731693	0.0000
Q	-0.598841	0.124774	-4.799412	0.0000
Δ NWC	0.795558	0.592680	1.342306	0.1801
LEVREG	-1.013909	0.748712	-1.354204	0.1763
RATIO	-0.001452	0.002418	-0.600618	0.5484
GROSSPPPE	5.484283	0.965965	5.677515	0.0000
INVENTUTRY	-0.384157	1.201940	-0.319614	0.7494
C	-2.576907	5.073267	-0.507938	0.6117
Adjusted Coefficient of determination	67.62%			
Durbin-Watson	2.18			
F statistics	7.66			
Probability (f statistics)	0.0000			

DISCUSSION AND CONCLUSION

The study examined the effect of firm life cycle on corporate policies for the firms listed in Tehran Stock Exchange during 2012-2016. Firm growth, investment, capital expenditures, debt, and cash holdings were the main variables in the study. Four hypotheses were examined and tested in the study. According to the results of testing the first hypothesis, one can state that at 95% confidence level, firms' growth has no significant effect on the investment of firms. The results of this hypothesis are inconsistent with the results of Abdolazari et al. (2013).

According to the results of the second hypothesis, one can state that at 95% confidence level, firm growth has a positive and significant effect on capital expenditures, which means that as the firm grows, the firm moves in a direction leading to an increase in capital expenditures. According to the results of the third hypothesis, one can state that at 95% confidence level, firm growth has no significant effect on firm debt. The results of this hypothesis were consistent with the results of Sarlak et al. (2015). They showed that the firm's life cycle is not related to corporate finance, and in the supply chain, firms use hierarchical method. Finally, according to the fourth hypothesis, one can state that at 95% confidence level, firm growth has no significant effect on cash holdings of the firms. The results were inconsistent with the results of the research by Aghaee et al. (2009). Hence, according to the results of the hypotheses, it was seen that firm growth has a significant effect only on capital expenditures. Thus, the investors who want to obtain some information on the life cycle of firms and invest

in firms in their growth stage are recommended to consider the firm's capital expenditures because firm growth has a direct and significant effect on capital expenditure.

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